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(54) **CLOTH TREATING APPARATUS**

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See application file for complete search history.

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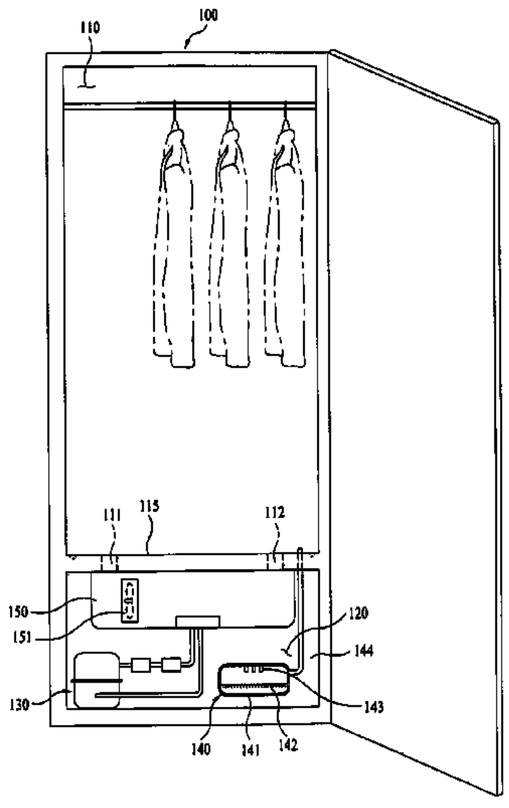
(57) **ABSTRACT**

Disclosed is a cloth treating apparatus, which supplies hot air to a accommodating space receiving clothes to dry the clothes. The cloth treating apparatus includes a cabinet including a accommodating space to receive clothes, and an electric component chamber, in which a moisture supply device to spray steam to the accommodating space and a air supply device to supply hot air are installed; and a condensed water treating unit to treat condensed water, generated by condensing the steam sprayed to the accommodating space or the hot air supplied from the air supply device. Therefore, the cloth treating apparatus treats the condensed water generated in the accommodating space, and thus prevents the generation of substances harmful to the human body, such as mold, in the accommodating space.

10 Claims, 5 Drawing Sheets



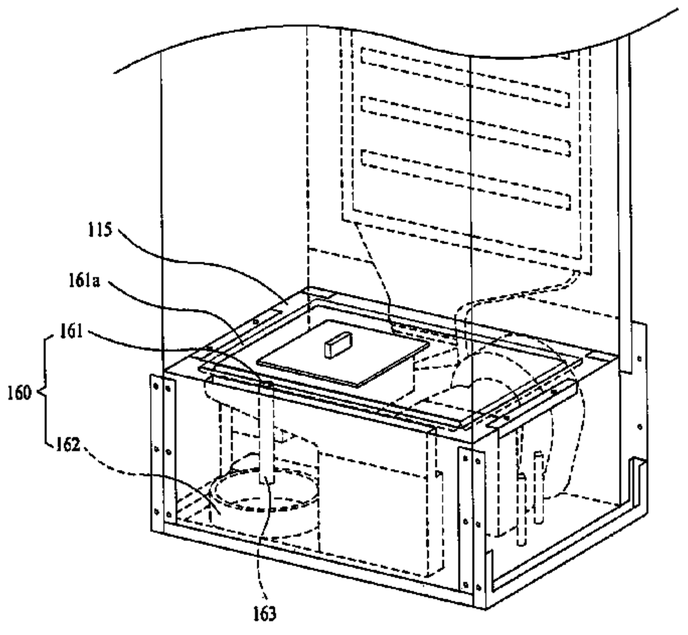


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Fig. 1

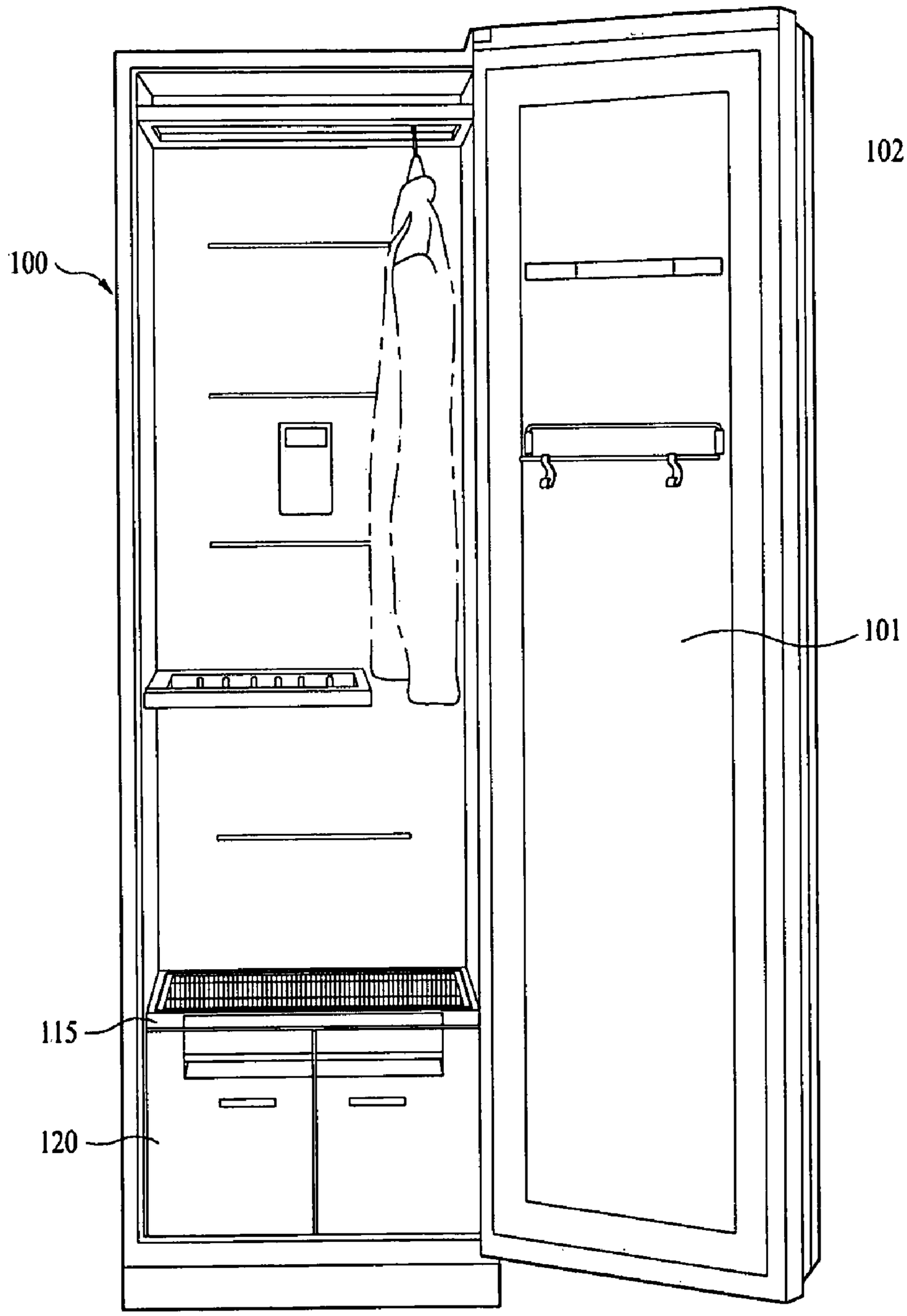


Fig. 2

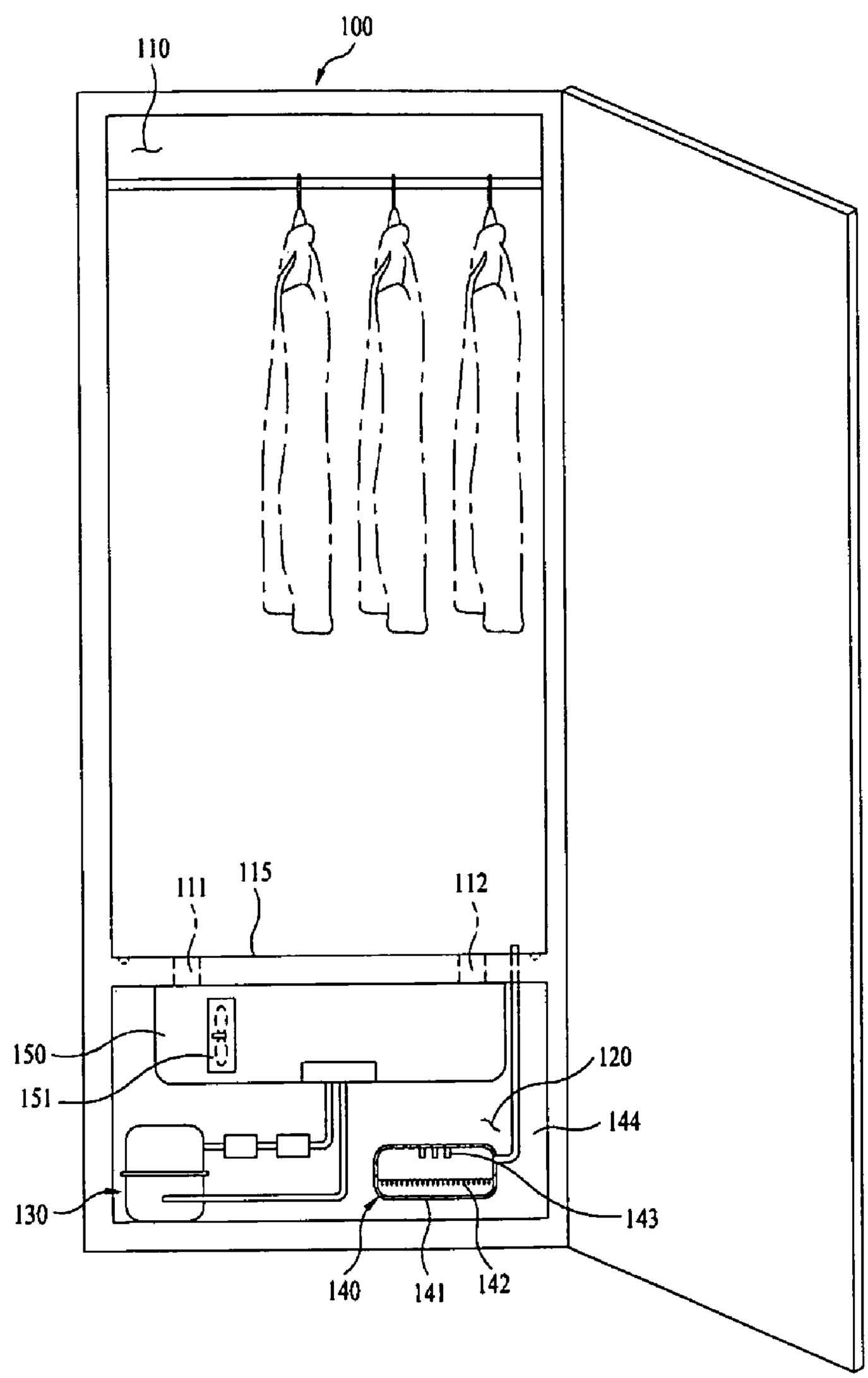


Fig. 3

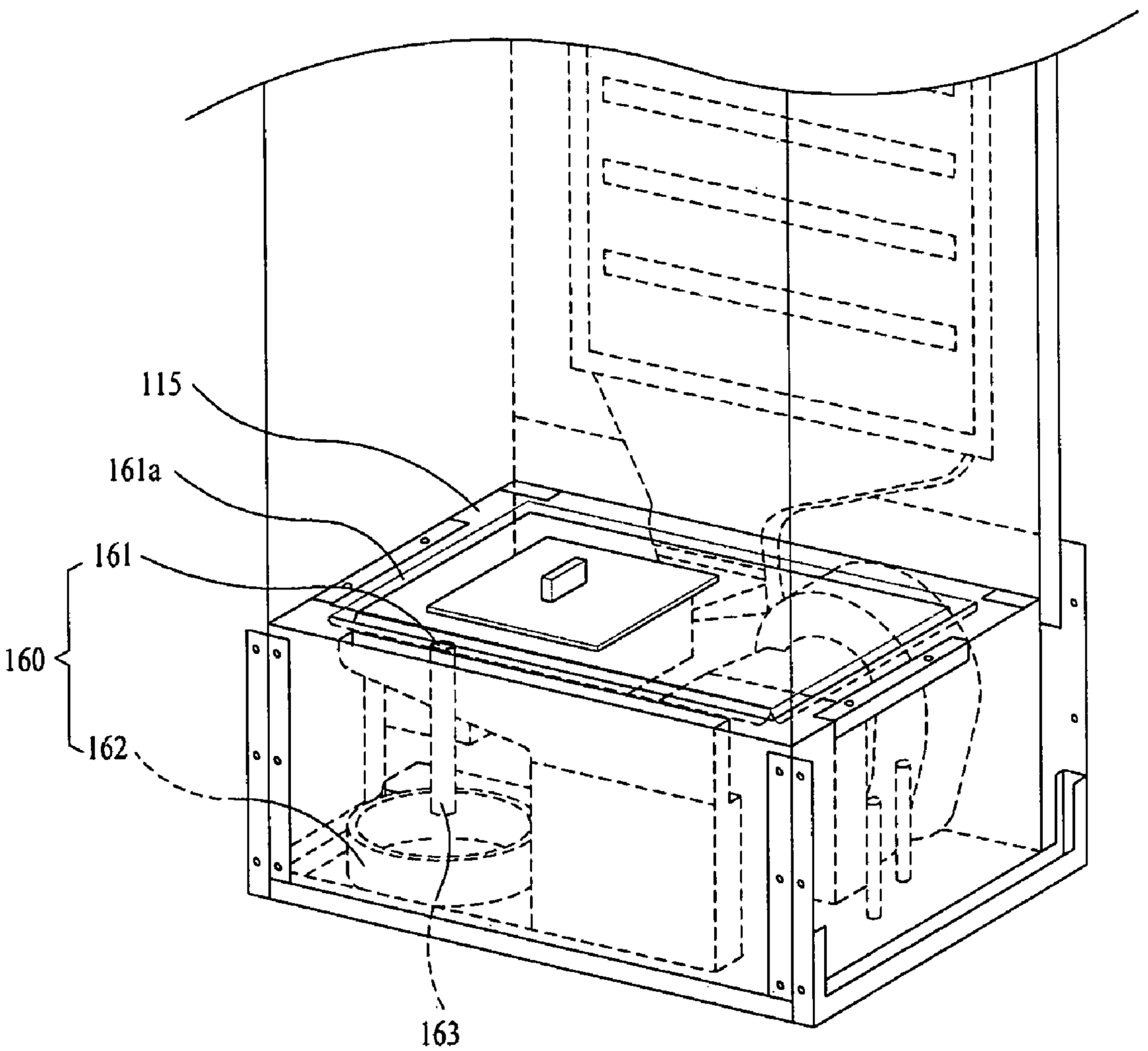


Fig. 4

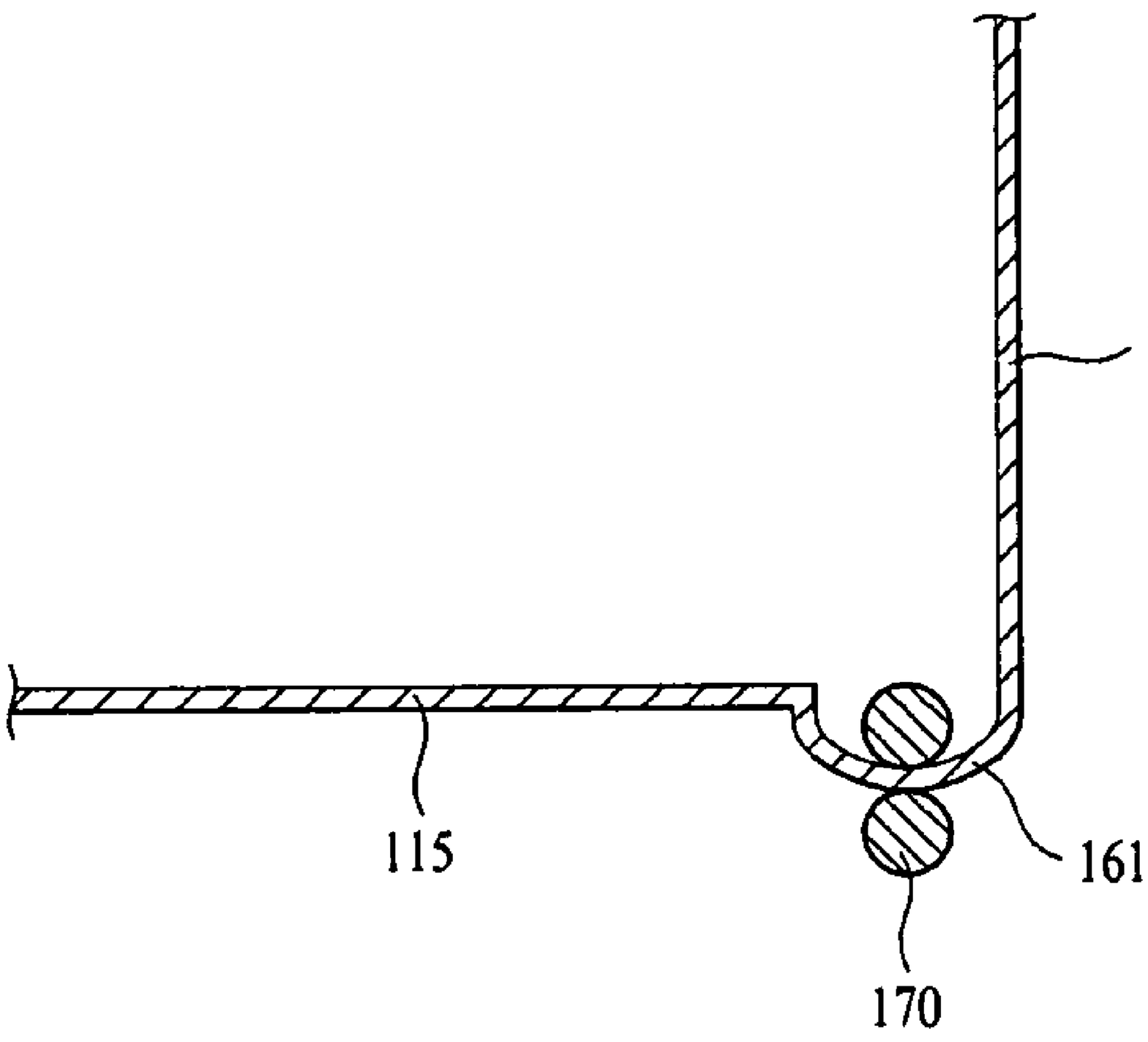
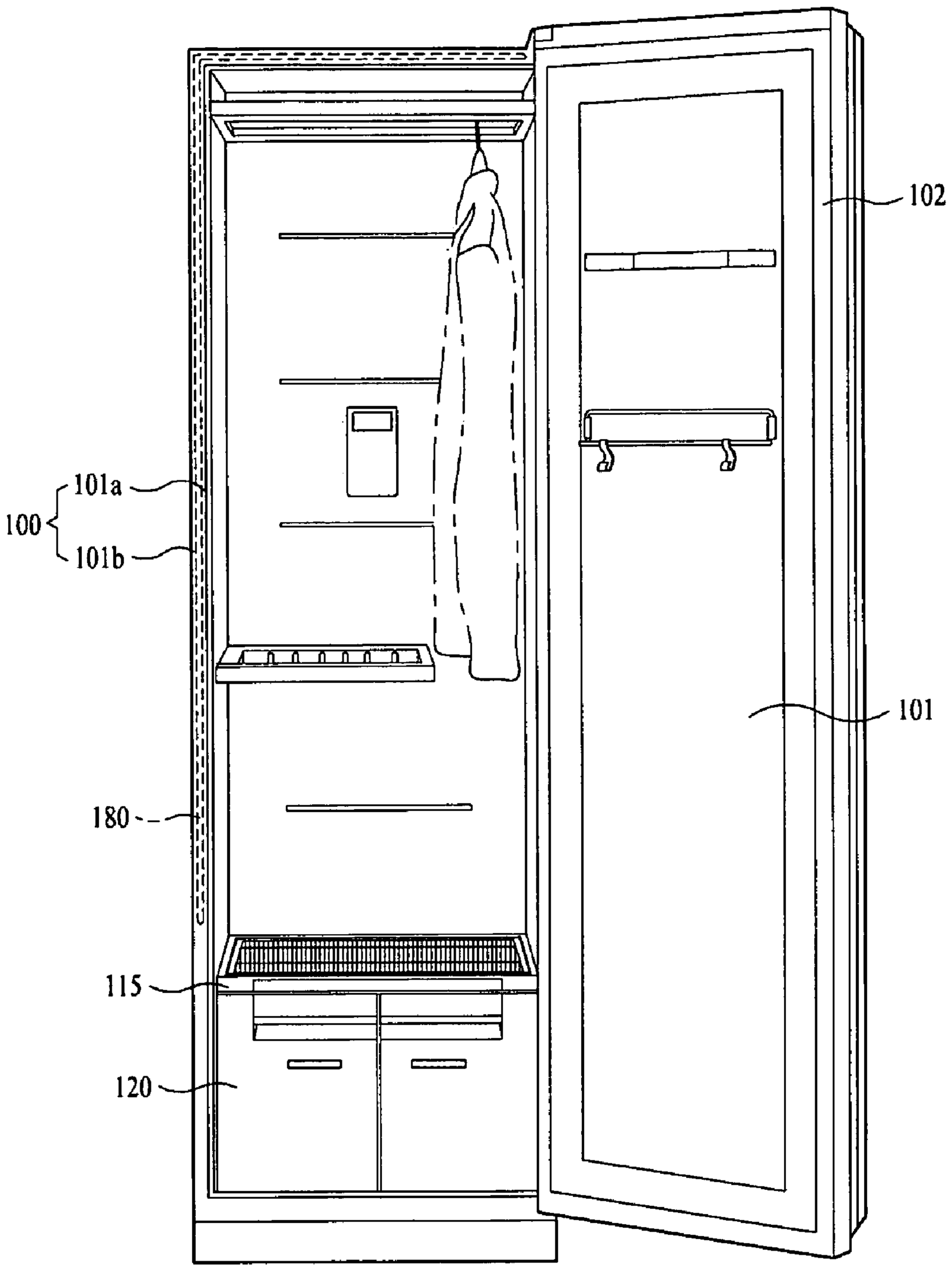


Fig. 5



CLOTH TREATING APPARATUS

This application claims the benefit of Korean Patent Application No. 10-2007-0078172, filed on Aug. 3, 2007, which is hereby incorporated by reference as if fully set forth herein.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a cloth treating apparatus, and more particularly, to a cloth treating apparatus, which supplies air to an accommodating space receiving clothes to dry the clothes.

2. Discussion of the Related Art

Generally, cloth treating apparatuses mean apparatuses, which perform washing and/or drying of laundry. Here, a single cloth treating apparatus may perform only a washing or drying function, or both washing and drying functions. Recently, a cloth treating apparatus with a moisture supply device having a refresh function, such as removal of wrinkles, smells, and static electricity of clothes, has been widespread.

Such a cloth treating apparatus includes an accommodating space to receive clothes, an air supply device neighboring with the accommodating space to supply air to the accommodating space, and an electric component chamber, in which a moisture supply device to spray moisture is installed.

The air emitted from the air supply device or the moisture sprayed from the moisture supply device is supplied to the accommodating space, and treats the clothes received in the accommodating space. However, a cabinet of the cloth treating apparatus is mostly made of a metal, the air or the moisture supplied to the accommodating space contacts the inner surface of the cabinet having a relatively low temperature and is condensed, thus generating condensed water in the accommodating space.

When the condensed water generated in the accommodating space is left, as it is, substances harmful to the human body, such as mold, are generated in the accommodating space and cause sanitary problems.

SUMMARY OF THE INVENTION

Accordingly, the present invention is directed to a cloth treating apparatus.

One object of the present invention is to provide a cloth treating apparatus with a condensed water treating device, which treats condensed water generated in a accommodating space receiving clothes when air or moisture is supplied to the accommodating space.

To achieve this object and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a cloth treating apparatus includes a cabinet including a accommodating space to receive clothes, and an electric component chamber, in which a moisture supply device to spray moisture to the accommodating space and a air supply device to supply air are installed; and a condensed water treating unit to treat condensed water, generated by condensing the moisture sprayed to the accommodating space or the air supplied from the air supply device.

It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. **1** is a perspective view of a cloth treating apparatus in accordance with one embodiment of the present invention;

FIG. **2** is a schematic view illustrating the internal constitution of the cloth treating apparatus of FIG. **1**;

FIG. **3** is a perspective view of a condensed water treating device in accordance with one embodiment of the present invention;

FIG. **4** is a cross-sectional view of a condensed water treating device in accordance with another embodiment of the present invention; and

FIG. **5** is a front view of a condensed water treating device in accordance with yet another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

As shown in FIGS. **1** and **2**, a cloth treating apparatus in accordance with one embodiment of the present invention has an external appearance formed by a cabinet **100**. The front surface of the cabinet **100** is opened, and the opened front surface of the cabinet **100** is opened and closed by a door **101**. A gasket **102** to adhere the door **101** closely to the front surface of the cabinet **100** when the door **101** is closed is installed on the rear surface of the door **101**. A magnetic substance, such as a rubber magnet, is installed in the gasket **102**, and thus allows the door **101** to be adhered closely to the front surface of the metal-made cabinet **100** when the door **101** is closed.

An accommodating space **110** to receive clothes is formed in the upper portion of the inside of the cabinet **100**, and an electric component chamber **120**, in which various devices to treat the clothes are installed, is formed in the lower portion of the inside of the cabinet **100**. The accommodating space **110** and the electric component chamber **120** are divided from each other by a diaphragm **115**.

Further, an air supply device **130** to supply air to the accommodating space **110** and a moisture supply device **140** to supply moisture to the accommodating space **110** are installed in the electric component chamber **120**.

Desirably air supplied by the air supply device **130** is hot air, and moisture supplied by the moisture supply device **140** is steam (air will be described 'hot air' and moisture will be described 'steam' as the follow).

Although FIG. **2** illustrates a method, in which the air supply device **130** generates heat using a heat pump forming a refrigeration cycle and supplies the generated heat to the accommodating space **110**, various methods, including a method, in which the air supply device **130** generates heat using an electric heater and supplies the generated heat to the accommodating space **110**, may be used.

In order to supply the hot air generated by the air supply device **130** to the accommodating space **110**, a supply duct **150** is installed in the electric component chamber **120**, and an air blast fan **151** is installed in the supply duct **150**. An air inlet **111**, through which air flows into the accommodating space **110**, is formed at one side of the bottom surface of the accommodating space **110**, and an air outlet **112**, through which the air flows out of the accommodating space **110**, is

formed at the other side of the bottom surface of the accommodating space **110**, such that the hot air supplied from the air supply device **130** can enter the inside of the accommodating space **110** and circulate. Further, the air inlet **111** and the air outlet **112** are respectively connected to both ends of the supply duct **150**.

The moisture supply device **140** to generate steam is installed in the electric component chamber **120**. Further, a steam supply pipe **144** to connect the moisture supply device **140** and the accommodating space **110** and thus guide the steam generated from the moisture supply device **140** to the accommodating space **110** is provided in the electric component chamber **120**.

The moisture supply device **140** includes a case **141** to store water, a heater **142** installed in the case **141**, and a water level sensing unit **143** to sense a water level in the case **141**. Here, any one method out of a tap water direct connection method, in which the moisture supply device **140** is directly connected to a water supply source such that water is supplied from the water supply source to the moisture supply device **140**, and a cartridge method, in which a user puts a designated amount of water into the case **141** of the moisture supply device **140**, may be used.

The cloth treating apparatus of the present invention includes a condensed water treating unit, which treats condensed water generated by contact of the hot air supplied from the air supply device **130** or the steam supplied from the moisture supply device **140** with the inner surface of the cabinet **100** forming the accommodating space **110**.

The condensed water treating unit includes a water collecting unit **160** to collect the condensed water generated in the accommodating space **110**, and a heating unit to heat and evaporate the condensed water generated in the accommodating space **110**.

FIG. **3** is a perspective view of the water collecting unit **160** installed in the cloth treating device in accordance with the present invention.

The water collecting unit **160** includes a drain **161** to collect the condensed water generated in the accommodating space **110**, and a sump **162** to gather the condensed water collected by the drain **161**.

The drain **161** is continuously formed along the edge of the diaphragm **115** forming the bottom surface of the accommodating space **110**. Thus, when the condensed water generated by the contact of the hot air or the steam supplied to the accommodating space **110** with the inner surface of the cabinet **100** flows down along the inner surface of the cabinet **100**, the condensed water is collected in the drain **161**.

In order to gather the condensed water collected in the drain **161**, a discharge hole **161***a* is formed at one side of the drain **161**, and the sump **162** to gather the condensed water discharged through the discharge hole **161** is installed below the discharge hole **161***a*. Preferably, a guide plate **163**, which guides the condensed water to prevent the condensed water discharged through the discharge hole **161***a* from being splashed about, is installed.

The diaphragm **115** is inclined toward the discharge holes **161***a* such that the condensed water collected in the drain **161** can flow to the discharge hole **161***a*. Thus, the condensed water generated in the accommodating space **110** flows down along the inner surface of the cabinet **100** and is firstly collected in the drain **161**, and the condensed water collected in the drain **161** flows down through the discharge hole **161***a* and is secondarily collected in the sump **162**.

In order to allow a user to empty the sump **162** filled with the condensed water, the sump **162** is detachably installed in the electric component chamber **120**. Thus, a user can periodically empty the sump **162** filled with the condensed water.

The above embodiment describes the sump **162** detachably installed in the electric component chamber **120**. In this case, the sump **162** is installed in the rear portion of the electric component chamber **120**, and thus it may be difficult to separate the sump **162** from the electric component chamber **120**. Therefore, a water drain tank (not shown), which is connected to the sump **162** and detachably installed at the front portion of the cabinet **100**, is provided such that the water collected in the sump **162** may be transferred to the water drain tank using a pump (not shown).

The cloth treating apparatus in accordance with one embodiment of the present invention includes the water collecting unit **160** including the drain **161** and the sump **162**, thus being capable of collecting and treating the condensed water generated in the accommodating space **110**.

Although the above embodiment describes the condensed water treating unit, which collects the condensed water, generated in the accommodating space **110**, in one place and then causes a user to remove the collected condensed water, a condensed water treating unit, which does not require a user to remove the collected condensed water, will be described hereinafter. Here, some parts in this embodiment, which are substantially the same as those in the former embodiment, are denoted by the same reference numerals even though they are depicted in different drawings, and a detailed description thereof will be omitted.

As shown in FIG. **4**, a condensed water treating unit in accordance with another embodiment of the present invention includes a water collecting unit **160** including only a drain **161**. Further, the drain **161** is not provided with a discharge hole to discharge the collected condensed water. The diaphragm **150**, on which the drain **161** is formed, is horizontally installed. However, a heating unit **170**, which applies heat to the drain **161** to evaporate the condensed water collected in the drain **161**, is installed below the drain **161**. A heat wire or a thermoelectric element may be used as the heating unit **170**. Since the condensed water collected in the drain **161** is evaporated using the heating unit **170** installed below the drain **161**, as described above, it is not necessary to periodically remove the condensed water collected in the drain **161**.

FIG. **5** illustrates a condensed water treating unit in accordance with yet another embodiment of the present invention.

Condensed water can be easily generated on the gasket **102** installed on the door **101** opening and closing the front surface of the cabinet **100**. The reason is that the gasket **102** is a boundary between the accommodating space **110** having a high temperature and the outside of the cabinet **100** having a low temperature and thus hot air or steam of the inside of the accommodating space **110** is easily condensed on the gasket **102**. When the condensed water generated on the gasket **102** is left for a long time, the gasket **102** may be covered with mold.

Thus, in order to remove condensed water generated on the contact portion between the front surface of the cabinet **100** and the gasket **102** of the door **101**, a heating unit **180** is installed, as shown in FIG. **5**.

The cabinet **100** includes an internal case **101***a* forming the accommodating space **110**, and an external case **101***b* separated from the internal case **101***a* by a designated interval. Preferably, the heating unit **180** is continuously installed between the internal case **101***a* and the external case **101***b*. Although this embodiment describes the heating unit **180** installed on the cabinet **100**, the heating unit **180** may be installed on a portion of the door **100**, on which the gasket **102**

is mounted. Any heat generating element, such as a heat wire or a thermoelectric element, may be used as the heating unit **180**.

As described above, the heating unit **180** is installed on the contact portion between the cabinet **100** and the door **101**, thus preventing the generation of mold due to the condensed water.

The condensed water treating units in accordance with various embodiments of the present invention have been described. In the above embodiments, the water collecting unit **160**, and the heating units **170** and **180** may be individually or simultaneously used.

As apparent from the above description, the present invention provides a cloth treating apparatus with a condensed water treating unit, which treats condensed water generated in a accommodating space receiving clothes to prevent the generation of substances harmful to the human body, such as mold, within the accommodating space.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A cloth treating apparatus comprising:

a cabinet including an accommodating space to receive clothes, and an electric component chamber, in which a moisture supply device to spray moisture to the accommodating space and an air supply device to supply hot air to the accommodating space are installed;

a condensed water treating unit to collect condensed water, generated by condensing the moisture sprayed to the accommodating space or the air supplied from the air supply device; and

a first heating unit installed to the condensed water treating unit and evaporating the condensed water collected in the condensed water treating unit by heating.

2. The cloth treating apparatus according to claim **1**, wherein the condensed water treating unit includes a drain to collect the condensed water generated in the accommodating space.

3. The cloth treating apparatus according to claim **2**, wherein the drain is continuously formed along the edge of the bottom surface of the accommodating space.

4. The cloth treating apparatus according to claim **2**, wherein the condensed water treating unit further includes a drain hole formed through the drain to discharge the condensed water collected in the drain, and a sump installed below the drain hole to gather the condensed water discharged through the discharge hole.

5. The cloth treating apparatus according to claim **4**, wherein the bottom surface of the accommodating space is inclined such that the condensed water collected in the drain flows toward the discharge hole.

6. The cloth treating apparatus according to claim **4**, wherein the sump is detachably connected to the cabinet.

7. The cloth treating apparatus according to claim **4**, wherein the condensed water treating unit further includes a water drain tank detachably connected to the cabinet and connected to the sump such that a user can remove the condensed water collected in the sump, and a pump to transfer the condensed water collected in the sump to the water drain tank.

8. The cloth treating apparatus according to claim **1**, wherein the first heating unit is installed under the condensed water treating unit, or wherein the first heating unit is at respective corners of a bottom surface of the accommodating space.

9. The cloth treating apparatus according to claim **1**, further comprising:

a door to open and close the opened front of the accommodating space; and

a second heating unit installed at a contact portion between the door and the cabinet and removing condensed water generated on the contact portion by heating.

10. The cloth treating apparatus according to claim **9**, wherein the cabinet includes an internal case forming the accommodating space and an external case separated from the internal case, and the heating unit is installed between the internal case and the external case.

* * * * *